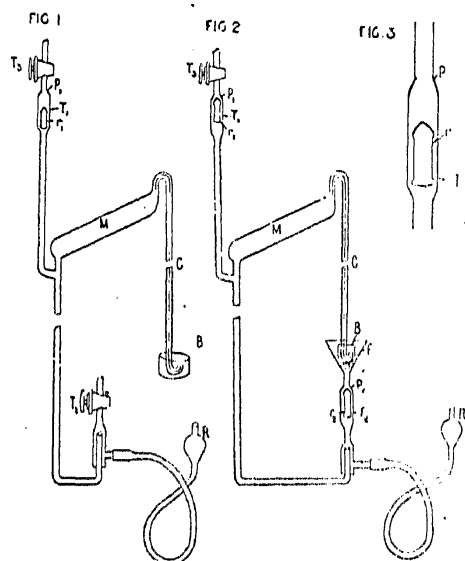


SOME IMPROVEMENTS TO THE TOPLER PUMP

THE two main difficulties generally experienced in the working of a Töpler pump (Fig. 1) are (1) the leakage of mercury through the stop-cock T, under the pressure of the mercury in the reservoir when the latter is raised to push out the gas from the main body M of the pump through the capillary C, in spite of all usual precautions being taken and, (2) the very careful attention to be paid by the worker in transferring again and again the excess of mercury, thrown out through the capillary C during the working of the pump, into the reservoir R. Neglect of the latter results in the overflowing of the mercury from the basin B. To avoid both the above-mentioned difficulties the modification devised by the author has been found satisfactory in use.

The modification adopted is simple and consists in putting in a ground-in trap T, (Fig. 2, similar to the one used in the inlet to the pump, i.e., T₁) in place of the stop-cock T, (Fig. 1). This is shown in detail in Fig. 3.



To the end of this trap is fused an ordinary funnel F (Fig. 2) such that the basin B which receives the mercury flowing through the capillary C, seats itself comfortably over a base (say a pipe clay triangle) placed inside the funnel. This is shown in Fig. 2. The function of this trap T, like the Trap T₁, is to close the passage to the mercury when the reservoir is lifted up in the course of the evacuation of the gas contained in the body M of the pump. This is achieved by the pushing up of the ground-glass hollow cylinder r, gradually against the ground-in passage P, by the rising mercury in the trap T. The mercury now flows up the body M of the pump displacing the gas completely through the capillary C. When the reservoir is lowered the ground-glass cylinder r, recedes along with the mercury column thus enabling the excess of the mercury overflowing the basin B to go down automatically into the reservoir through the trap T. Thus the addition of the trap T, as described above not only eliminates the stop-cock T, (Fig. 1) along with the other difficulties consequent on its use (outlined above),

but also obviates the necessity of transferring into the reservoir the mercury overflowing the basin, which need be done rather very often with the normal type of the pump.

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CHROMOSOME NUMBER OF *CARICA* *DODECAPHYLLA* VELL. FL. FLUM

THE chromosome number of *Carica pubescens* Lenne and Koch, a strictly dioecious species was reported in a previous note¹ to be $2n = 18$ and it was pointed out that the somatic complement showed no heteromorphic pair of chromosomes to distinguish the two sexes. During further investigations on the cytology of *Carica** the chromosome number and their characteristics of *C. dodecaphylla* Vell. Fl. Flum which is also a strictly dioecious species have been determined. Cytological examination of about fifteen metaphase plates from about ten root-tips revealed the diploid number to be eighteen in this case also. No marked differences are discernible between the somatic compliments of *C. dodecaphylla*, and those of *C. pubescens* and *C. papaya*. Besides, the position of attachment constriction is the same, namely, median or sub-median in the above three species of *Carica*. Distinctly heteromorphic pair of chromosomes could not be noted. The absence of a heteromorphic pair of chromosomes in *C. pubescens* and *C. dodecaphylla* and the similarity of chromosomes of these and other investigated species of *carica* appear to further support the view expressed by Storey (1941) of close relationship among them.

Our thanks are due to His Majesty's Consul-General at Buenos Aires, for seeds of *C. dodecaphylla*.

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¹ Kumar, L. S. S., and Abraham, A., *Curr. Sci.*, 1941, 11, No. 2, 58. ²Storey, W. B., *Hawaii Ag. Expt. Station Bull.*, 1941, No. 87, 6-7.

* Scheme for research on the "Cytology of *Papaya*," financed by the Imperial Council of Agricultural Research, New Delhi.

A NEW GENE FOR LINTLESSNESS IN ASIATIC COTTONS

THE appearance of lintless mutants in Asiatic cottons has often been reported and their genetic behaviour described by different workers in India. In 1940, the writer came across one such mutant in the Broach 9 (*G. herbaceum*) seed multiplication area at the Baroda Agricultural Experimental Station. The mutant is characterised by a hairy plant body and a